

## Key Features

- Good dimensional accuracy
- Low shrinkage & Low Viscosity
- Easy to Demould
- Excellent tear strength & tensile properties

## Product Description

Easy Composites' CS25 Condensation Cure Silicone Rubber is a low viscosity, two-part condensation cure silicone rubber. It is used for mould making where it is mixed (with its catalyst) and then poured around a pattern to create a flexible silicone mould.

CS25 has been specially selected for its ease of use, excellent performance and great value.

Once cured the silicone rubber is very soft and flexible making it perfect for casting complicated or intricate shapes where the cast part can be easily removed from the silicone mould. The long pot-life of our silicone allows plenty of time for careful pouring and self de-gassing although forced degassing in a vacuum chamber can also be performed if required.

Features:

- Easy to use - no special equipment or conditions required
- High tear strength and excellent elongation (making removal of even complex shapes from the mould easy)
- Good chemical resistance to styrene and polyurethane
- Low viscosity - fantastic flow properties
- Great value!

## Recommended Uses

The cured mould can then be used to produce precise replicas of the original part, including fine surface detail, out of a range of materials including polyester, epoxy and polyurethane resin, urethane foam, wax, casting plaster, Jesmonite, and reconstituted stone.

This Silicone should not be used with Water Clear Casting Resins such as the Water Clear Polyester or Polyurethane Resins as the inherent moisture content of this type of silicone can inhibit the curing of the resin.

## Properties

The table below shows the typical uncured properties:

Property	Units	Silicone	Hardener	Combined
Material	-	Base Rubber	Catalyst	Silicone Rubber
Appearance	-	White Liquid	Black Liquid	Grey Liquid
Viscosity @25 °C	mPa.s.	23000 - 29000	15 - 25	20000 - 26000
Density @25 °C	g/cm <sup>3</sup>	1.05 - 1.15	0.93 - 0.98	1.04 - 1.14

## How to Use

CS25 is a chemical product for professional use. It is essential to read and understand the safety and technical information before use.

Follow the guidelines for safe use outlined in the SDS which include the use of appropriate hand and eye protection during mixing and use.

### Mix Ratio

#### Mix Ratio 100:5 by Weight

CS25 Condensation Cure Silicone should be mixed with Condensation Cure Catalyst at a ratio of 100 parts of silicone to 5 parts of Catalyst, by weight.

Failure to do so will result in a poor or only partial cure of the silicone, greatly reduced mechanical properties and possibly other adverse effects. Under no circumstances add 'extra catalyst' in an attempt to speed up the cure time; Addition Cure Silicones do not work in this way.

### Mixing Instructions

Only weigh out and mix as much silicone as you can use within the pot life. Weigh or measure the exact correct ratio of silicone and catalyst into a straight sided container. Using a suitable mixing stick begin to mix the silicone and catalyst together to combine them completely.

Mix thoroughly together both parts of the system ensuring the container used is at least five times the volume of the material being mixed e.g. For a 2 Kg mix use a 10 litre container.

Extra care should be taken when mixing to ensure a homogeneous mix. When you think the mixture is homogeneous, mix again to ensure thorough mixing.

Before use the mixed silicone should be correctly de-gassed in a vacuum chamber to remove air trapped within the mix.

### De-Gassing

When the material is thoroughly mixed it should be placed in a vacuum chamber to de-gas. When vacuum degassing the material will expand to approximately five times its original volume and then collapse, it is at this point that the material has been successfully vacuumed.

When degassing use 40mbar (30mm Hg). After pouring the silicone over the master place the set-up box into the degassing chamber and degas again for best results. Mould life and tear strength are also improved with degassing.

# CS25 CONDENSATION CURE SILICONE RUBBER

If no vacuum chamber is available it might be possible to de-gas the mixed silicone using the 'stretch-pour' method whereby the silicone is poured into the mould by means of a very small hole in the bottom of a vessel containing the mixed silicone.

The vessel should be positioned at a height of more than 1m above the set-up box and allowed to pour into a corner of the set-up box in a very thin trickle. As the silicone is stretched during the pour air bubbles will be forced to the surface and squeezed out of the silicone.

## Typical Use

A part to be copied is positioned within a 'setup box' which will contain the silicone rubber whilst it cures.

The silicone rubber is thoroughly mixed with its catalyst at the correct ratio and then carefully poured all over the surface of the part to be copied (the master). Burst air bubbles on the surface by gently pressing them with a spatula. Starting in this way will ensure that no air is trapped around cavities or details of the master.

Once the surface of the part is covered the remainder of the silicone is poured into the setup box. Pour into one place on in the box and again be careful not to trap any air as you do. If you have a degassing chamber you can degas again now that the silicone has been poured. The silicone will cure at room temperature in around 24hrs.

Once the silicone has cured it is removed from the setup box and then the flexibility of the rubber is used to allow removal of the part from inside the new silicone rubber mould.

## Use of Release Agents

Silicone generally speaking will only stick to other silicone's so you should not need a release agent. However, certain materials are porous or are fragile in their make up and it is possible for the silicone to grip in the pores or gaps between polystyrene beads and thus when removing the part from the mould, the silicone may grip in those areas and damage the part removing it.

It is recommended to seal the surface with an appropriate paint or coating to give the material a smooth and durable surface that the silicone cannot grip to. PVA, Shellac (sanding sealer) or paint/lacquer can all be used to seal the surface of porous materials. If in doubt, always test a small area first.

Pretty much the only material silicone will stick to is other silicone, so a release agent is needed if pouring over silicone (eg creating a 2 part mould). A thin smear of Vaseline (which can be thinned using methylated spirits) or a spray wax called Macwax make effective release agents when you need to release silicone from silicone.

## Pot-Life / Working Time / Cure Time

Transfer the Silicone from the mixing pot onto the part as soon as possible to avoid the risk of cure in the mixing pot.

CS25 does not release heat during cure or rely on heat to cure so increasing the temperature above ambient will not reduce the cure time. Condensation cure reactions actually need some ambient moisture and so you will often find that using an oven to try to speed up the cure has the opposite effect and actually slows down the cure of condensation cure silicones.

CS25 can be used in ambient temperatures between 15°C (59°F) and 30°C (86°F). For best results, an ambient temperature of at least 20°C (68°F) is recommended.

The following table gives an indication of pot-life and cure times:

Pot-Life @ 25 °C	Demould Time @ 25 °C
60 - 90 Minutes	24 Hours

## Mechanical Properties

The following table illustrates the Cured Silicone Properties after curing for 7 days at room temperature:

	Units	Result
Colour		Grey
Density 25°C	g/ml	1.04 - 1.14
Linear Shrinkage	%	< 0.3
Hardness 25°C	Shore A	23 - 27
Tensile Strength	MPa	3.8 - 4.2
Tear Strength	kN/m	15 - 20
Elongation at break	%	500 - 550
Service Temperature	°C	-60 to 250

## Transport and Storage

Silicone and catalyst should be kept in tightly seal containers during transport and storage. Both the resin and hardener should be stored in ambient conditions of between 10°C (50°F) and 25°C (77°F).

When stored correctly, the silicone and catalyst will have a shelf-life of 6 months. Although it may be possible to use the silicone after a longer period, a deterioration in the performance of the silicone will occur. Pay particular attention to ensuring that containers are kept tightly sealed.

## Disclaimer

This data is not to be used for specifications. Values listed are for typical properties and should not be considered minimum or maximum.

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